

METHQUEST | MethFuel

- 1 MW PEM electrolysis operable up to 200 percent of nominal capacity
- Grid stability through control energy with simultaneous hydrogen production
- MethFuel joint project initiated as part of the MethQuest lead project
- Green methane/RE methane for mobility and stationary applications

MethFuel -Efficient production of RE methane as a fuel for the mobility sector and stationary applications

Industriepark Höchst: AREVA H₂Gen's PEM electrolysis system is giving 200 percent for the german energy transition

05.02.2019 Cologne | As part of the MethFuel joint project, AREVA H₂Gen and its project partners are developing a 1 MW PEM electrolysis system with an overload capacity of 100 percent. The system is set to be operable at up to 200 percent (up to 2 MW) of nominal power in the Industriepark Höchst. The innovative combination of full production capacity and 100 percent flexible electrolysis operation while also contributing to the primary control energy market provides grid stability and enables profitable operation.

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AREVA H₂Gen - Coordinating the MethFuel joint project

"The time has come! We are launching the MethFuel joint project, funded by the Federal Ministry for Economic Affairs and Energy: innovative methane generation based on renewable sources. This is the first in a series of six joint projects under the MethQuest lead project", says Carsten Krause, Managing Director of AREVA H₂Gen GmbH and MethFuel joint project coordinator. "A total of nine companies and research facilities will rise to the challenge. We want to produce green methane for a cleaner environment. We'll be producing a cleaner fuel from volatile, sustainably generated electricity. It will be available as a fuel for transport such as cars, lorries and shipping as well as for stationary applications".

Jointly coordinated by AREVA H₂Gen, MethFuel will promote the further development of innovative technologies along the renewable methane (RE methane) generation chain. Significant results are expected in the field of PEM and high-temperature electrolysis, CO₂ supply and methanation. The 100% overloadable 1 MW PEM electrolysis system will be developed, produced and put into operation by AREVA H₂Gen together with their partners iGas energy and Fraunhofer ISE, and put into operation at the Industriepark Höchst site.

1 MW PEM electrolysis system at the Industriepark Höchst site

The Industriepark Höchst, with its approximately 90 companies in the chemical and pharmaceutical industry and its suppliers, is very suitable as a location. Among other things, site operator Infraserv GmbH & Co. Höchst KG ensures the supply of energy (including electricity and steam) and environmentally sound disposal of waste and wastewater.

In 2014, the company created a study on the design, construction and operation of 5 MW and 20 MW methanation plants for the "Power to Gas" energy storage concept. "Infraserv Höchst currently provides primary control reserve and secondary control reserve to stabilise the German power grid, and will integrate the MethFuel joint project's planned 1 MW PEM electrolysis system into the respective pool", explains Prof. Dr. Thomas Bayer of Infraserv GmbH & Co. Höchst KG. "The hydrogen produced in fluctuating quantities in actual operation can easily be made available to research and development projects at the Höchst Industrial Park's H₂ network".

The MethQuest lead project

With its joint projects MethFuel, MethCar, MethPower, MethMare, MethGrid and MethSys, the MethQuest lead project supports the introduction and market ramp-up of methane-based fuels produced using renewable energy sources without fossil carbons. Rolls-Royce Power Systems will coordinate the project together with its subsidiary, MTU Friedrichshafen GmbH, and the DVGW Research Centre at the Engler-Bunte-Institut of the Karlsruhe Institute of Technology (KIT).

The MethFuel joint project is an important pillar of the lead project

Dr. Manuel Boog, Manager of Research & Technology Systems at MTU Friedrichshafen GmbH and overall MethQuest project coordinator, explains the importance of MethQuest for the energy revolution: "With MethQuest, we have created the first joint project in which various partners work together along the energy flow, from renewable energy generation to its use in methane form in stationary and mobile engines. So, we have a good chance of developing workable solutions over the course of the project, which will become available at the end of the project". Dr. Boog adds: "Methane fuel is at the core of the project. The MethFuel joint project is an enormously important pillar of the project because it investigates the conversion of renewable electricity into transportable and storable methane. In order for regenerative energies to play a significant role in the context of the energy revolution, it is extremely important that MethFuel leads to technically and economically feasible concepts for fuel production. The MethFuel project is expected to provide significant insights into PEM and high-temperature electrolysis, CO₂ supply and methanation of renewable energy (RE) sources".

The future role of RE methane depends on the efficiency and costs along the entire value chain

"The future demand for gas is difficult to predict," says Dr. Frank Graf, who is also responsible for overall MethQuest project coordination and Head of Gas Technology at the DVGW Research Centre at the Engler-Bunte-Institut, Karlsruhe Institute of Technology (KIT). "What's clear is that, in the long term, many applications, such as ocean shipping, heavy goods vehicles and large parts of the heat generation sector, can only operate if chemical energy sources are available. The role of RE methane in our future energy system will depend primarily on the efficiency and costs along the entire value chain, i.e. production, transport and application of RE methane. Generation technologies, i.e. 'Power to Gas', are being scrutinised extensively within the MethFuel network, and their interaction is being developed further in order to make them as cost- and energy-efficient as possible, and to adapt them to the changing supply of renewable electricity". Dr. Graf concludes: "The network thus plays an essential role in MethQuest. We should also highlight the broad consortium of research, energy and industry. A total of 27 partners are working together on solutions in the MethQuest lead project, and are daring to think outside the box".



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BU: The operation of AREVA H₂Gen's PEM electrolysis system developed within the MethFuel joint project is planned at Industriepark Höchst, an innovative chemical and pharmaceutical site in Europe's heartland which includes approximately 90 companies in the chemical-pharmaceutical industry and their suppliers.

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MethQuest: Advancing the energy revolution with RE methane

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Project management of the MethFuel joint project as part of the MethQuest lead project

www.methquest.de/ueber-methquest/methfuel

AREVA H₂Gen GmbH is a technology supplier that develops, produces and sells PEM electrolyzers standardised between 25 and 600 kW as well as - flexibly and modularly - upwards of one MW. AREVA H₂Gen was formed in 2014 by the merger of AREVA Helion, CETH2's electrolysis division and a third shareholder, ADEME - the French Energy Agency (Agence de l'Environnement et de la Maîtrise de l'Énergie). The company can fall back on knowledge gained over 25 years of research and development in the field of PEM technology. AREVA H₂Gen is responsible for the coordination of the MethFuel joint project. The project is part of the MethQuest lead project, which is funded by the Federal Ministry for Economic Affairs and Energy.

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